

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-14: (canceled).

Claim 15 (previously presented): A bearing for a wheel comprising:
a fixed ring,
a rotating ring,
a plurality of rolling members rollably arranged in a circumferential direction between the fixed ring and the rotating ring, and
a magnetic encoder, wherein
the magnetic encoder comprises a magnet portion substantially in a circular ring shape magnetized in multipoles in a circumferential direction and a fixed member, and
the magnet portion is bonded to the fixed member and includes a magnetic member and a thermoplastic resin.

Claim 16 (previously presented): The bearing according to Claim 15, wherein the thermoplastic resin is polyamide based resin or polyphenylene sulfide (PPS).

Claim 17 (previously presented): The bearing according to Claim 16, wherein the thermoplastic resin is polyamide 6, polyamide 12, polyamide 612 or polyamide 11.

Claim 18 (previously presented): The bearing according to Claim 17, wherein the thermoplastic resin contains a silane coupling agent or an oxidization preventing agent.

Claim 19 (previously presented): The bearing according to Claim 16, wherein the thermoplastic resin is polyamide 12, polyamide 612, polyamide 11 or polyphenylene sulfide (PPS).

Claim 20 (previously presented): The bearing according to Claim 15, wherein a flexural deflection at 23 C° of the magnet portion (thickness $t = 3.0$ mm, ASTM D790; span distance of 50 mm) is within a range of 2 to 10 mm.

Claim 21 (previously presented): The bearing according to Claim 20, wherein the thermoplastic resin includes a thermoplastic resin at least having a soft segment in a molecule.

Claim 22 (previously presented): The bearing according to Claim 20, wherein a plasticizer is included by about 0.1 through 4 weight % in total weight.

Claim 23 (previously presented): The bearing according to Claim 15, wherein the magnet portion includes at least ferrite as the magnetic member, and the magnetic member includes 60 through 80 volume % of a magnet portion.

RESPONSE TO RESTRICTION REQUIREMENT AND ELECTION OF SPECIES
REQUIREMENT AND AMENDMENT UNDER 37 C.F.R. § 1.111

Application No.: 10/586,990

Attorney Docket No.: Q96144

Claim 24 (previously presented): The bearing according to claim 23, wherein the magnetic member of the magnet portion is an anisotropic magnet which is orientated by a magnetic field.

Claim 25 (previously presented): The bearing according to Claim 23, wherein the magnetic property of the magnet portion is in a range of 1.3 through 15 MGOe as a maximum energy product (BHmax).

Claim 26 (previously presented): The bearing according to Claim 25, wherein the magnetic property of the magnet portion is in a range of 1.63 through 2.38 MGOe as a maximum energy product (BHmax).

Claim 27 (previously presented): The bearing according to Claim 26., wherein a flexural deflection at 23 C° of the magnet portion (thickness $t = 3.0$ mm, ASTM D790; span distance of 50 mm) is in a range of 2 through 10 mm.

Claim 28 (previously presented): The bearing according to Claim 23, wherein a number of poles of the magnet portion is about 70 through 130 poles, and a single pitch error is equal to or smaller than $\pm 2\%$.

Claim 29 (previously presented): The bearing according to Claim 15, wherein the magnet portion and the fixed member are bonded by said phenolic resin based adhering agent.

RESPONSE TO RESTRICTION REQUIREMENT AND ELECTION OF SPECIES
REQUIREMENT AND AMENDMENT UNDER 37 C.F.R. § 1.111

Application No.: 10/586,990

Attorney Docket No.: Q96144

Claim 30 (currently amended): The bearing according to Claim 29, wherein the magnet portion is formed by insert molding, and the phenolic resin based adhering agent is progressed to be subject to ~~curing~~curing reaction in insert molding of the magnet portion.

Claim 31 (previously presented): The bearing according to Claim 15, wherein the magnet portion and the fixed member are bonded by said epoxy resin based adhering agent.

Claim 32 (currently amended): The bearing according to Claim 31 wherein the magnet portion is formed by insert molding, and the epoxy resin based adhering agent is progressed to be subject to ~~curing~~curing reaction in insert molding of the magnet portion.

Claim 33 (previously presented): The bearing according to Claim 30, wherein the bending elastic modulus or Young's modulus of the phenolic resin based adhering agent or, the epoxy resin based adhering agent is in a range of 0.02 through 5 GPa, or a hardness (durometer D scale: HDD) is in a range of 40 through 90.

Claim 34 (previously presented): The bearing according to Claim 33, wherein the bonding surface of the fixed member has 0.2 through 2.0 μm by an arithmetic mean height Ra and about 1.5 through 10 μm by a maximum height Rz.

Claim 35 (previously presented): The bearing according to Claim 15, wherein the magnet portion pinches a flange portion of the fixed member so that the magnet portion and the fixed member are mechanically bonded.

Claim 36 (previously presented): The bearing according to Claim 35, wherein the bonding surface of the fixed member has 0.2 through 2.0 μm by an arithmetic mean height R_a and about 1.5 through 10 μm by a maximum height R_z .

Claim 37 (previously presented): The bearing according to Claim 35, wherein said phenolic resin based adhering agent or said epoxy resin based adhering agent are used together.

Claim 38 (previously presented): The bearing according to Claim 15, wherein a notched portion is provided on an outer circumference of a flange portion of the fixed member, and

the magnet portion and the fixed member are mechanically bonded by the notched portion.

Claim 39 (previously presented): The bearing according to Claim 38, wherein the bonding surface of the fixed member has 0.2 through 2.0 μm by an arithmetic mean height R_a and about 1.5 through 10 μm by a maximum height R_z .

Claim 40 (previously presented): The bearing according to Claim 38, wherein said phenolic resin based adhering agent or said epoxy resin based adhering agent are used together.

Claim 41 (previously presented): The bearing according to Claim 15, wherein the fixed member includes a plurality of members, and is mechanically bonded to the magnet portion.

Claim 42 (previously presented): A method for manufacturing a bearing for a wheel, the bearing comprising a magnetic encoder which includes a magnet portion and a fixed member, the magnet portion containing a magnetic member and a thermoplastic resin, the method comprising the follow step:

forming the magnet portion by injection molding in the state of applying a magnetic field.

Claim 43 (previously presented): The method according to Claim 42, further comprising the following step:

forming the magnet portion by injection molding in the state of applying the magnetic field in the thickness direction thereof.

Claim 44 (previously presented): A method for manufacturing a bearing for a wheel, the bearing comprising a magnetic encoder which includes a magnet portion and a fixed member, the magnet portion containing a magnetic member and a thermoplastic resin, the method comprising the following step:

forming the magnet portion by insert molding in a state that the fixed member baked with an adhering agent at the surface in the semicured state is a core.

Claim 45 (previously presented): The method according to Claim 44, wherein a phenolic resin based adhering agent or an epoxy resin based adhering agent are used as the adhering agent.

Claim 46 (previously presented): A method for manufacturing a bearing for a wheel, the bearing comprising a magnetic encoder which includes a magnet portion and a fixed member, the magnet portion containing a magnetic member and a thermoplastic resin, the method comprising the following step:

forming the magnet portion using a disk gate type injection molding.

Claim 47 (previously presented): The method according to Claim 46, further comprising the following step:

forming the magnet portion in a state of applying a magnetic field.

Claim 48 (previously presented): The method according to Claim 46, further comprising the following step:

forming the magnet portion by insert molding.